

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
28 October 2004 (28.10.2004)

PCT

(10) International Publication Number  
**WO 2004/092571 A1**

(51) International Patent Classification<sup>7</sup>: **F02M 25/12**

(21) International Application Number:  
PCT/GB2004/001561

(22) International Filing Date: 8 April 2004 (08.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0308729.3 15 April 2003 (15.04.2003) GB

(71) Applicant (for all designated States except US): **H-EM-POWER CORP** [BS/BS]; 3rd Floor, Trade Winds Building, Bay Street, Nassau (BS).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **MCNEIL, John** [GB/GB]; 1 The Gallops, Vigo Village, Meopham, Gravesend, Kent DA13 0SS (GB).

(74) Agent: **FRANK, B. Dehn & Co.**; 179 Queen Victoria Street, London EC4V 4EL (GB).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

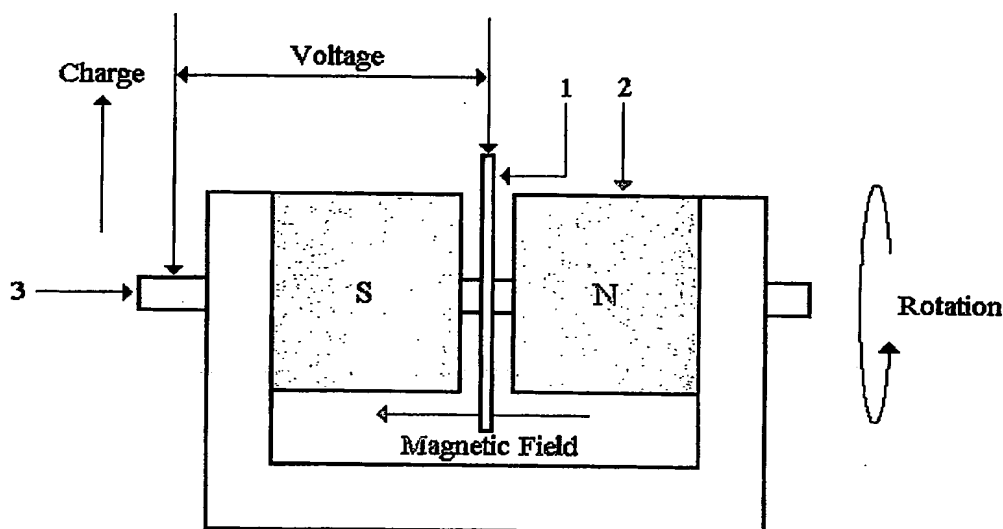
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: INTEGRATED RENEWABLE ENERGY SYSTEM



(57) Abstract: A system and method are disclosed comprising coupling a compression ignition engine (17) to an AC electrical generator (18) and/or a DC homopolar generator (19), wherein the homopolar generator (19) produces an electric current which is used to electrolyse water into hydrogen and oxygen. The hydrogen from the water electrolysis process may be used as a renewable fuel, either in the form of a gaseous fuel or a reactant in a fuel cell. The oxygen from the water electrolysis unit (23) may be used to produce an oxygen enriched combustion atmosphere in the engine (17). The oxygen may optionally be used as a reactant, along with the hydrogen, in a fuel cell.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*